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EXAMINER
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ASSAF, FAYEZ G

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 07/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/823,173

Applicant(s)

BUSE ET AL.

Examiner

Fayez G. Assaf

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) 78 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 21 April 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

Continuation of Disposition of Claims: Claims pending in the application are 1,2,4-7,9-11,13-22,25-27,30,31,38-41,43,49-55,59-61,63,64,72-78,83-85,87-90 and 93-96.

Continuation of Disposition of Claims: Claims rejected are 1,2,4-7,9-11,13-22,25-27,30,31,38-41,43,49-55,59-61,63,64,72-77,83-85,87-90 and 93-96.

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**DETAILED ACTION**

***Claim Objections***

Claim 49 objected to because of the following informalities:

Claim 49, line 1, the word "said" is extraneous.

Appropriate correction is required.

***Election/Restrictions***

Applicant's election without traverse of Species 1: claims 2, 5-7, 9, 10, 13-16, 25-27, 41, 43, 49-55, 61, 63, 64, 77-78, 84, 85, 90, and generic claims 1, 76, 87, 4, 11, 17-22, 30, 31, 38-40, 59, 60, 72-75, 83, 88, 89, 93-96 in Paper No. 7 is acknowledged.

Claim 78 clearly belongs to Species II (tuning by electric field), as such the claim has been withdrawn from consideration.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1, 9, 17, 22, 27, 60, 72, 74, 75, 87 and 88 are rejected under 35 U.S.C. 102(b) as being anticipated by De Vreet et al. (US 5,640,256).

Regarding claims 1, 60, 72 and 87, De Vreet discloses a tunable optical device (line 11 of Col. 10) comprising, a holographic element (10 of Fig. 7), having a hologram therein which has a predetermined relationship to a plurality of wavelengths (line 23 to line 25 of Col. 9), a wavelength varying element (26 of Fig. 2), coupled to the holographic element, and varying said predetermined relationship (i.e. according to Bragg matching condition), and a first optical system, handling first wavelengths of an optical signal, which pass through the holographic element without being changed by the hologram as an output signal (i.e. the system receiving the transmitted portion of beam 18), and a second optical system (i.e. the system receiving reflected beam 22 in Fig. 8), separated from the first optical system, and handling a second optical signal including the plurality of wavelengths having said predetermined relationship as varied by the wavelength varying element (line 11 to line 51 of Col. 9). It is noted that the filter

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inherently has optical systems for receiving transmitted or reflected signals.

Regarding claims 60 and 88, De Vreet discloses an optical system positioned to apply an optical signal (18 of Fig. 7), wherein the signal is applied to the hologram to change a Bragg matching condition. The transmitted signal defines a first path, and the reflected signal defines a second path (see Fig. 7, line 12 to line 25 of Col. 9).

Regarding claim 72, De Vreet discloses the Bragg matching relationship to a plurality of wavelengths depending on an orientation parameter ( $\theta_B$  in Fig. 7).

Regarding claims 17, 74, 75 and 87, De Vreet discloses the hologram being a diffraction grating (claim 1).

Regarding claim 9, De Vreet discloses the output signal extending in substantially a same direction as an input signal (see Fig. 15).

Regarding claim 22, De Vreet discloses the holographic element including the hologram forming a grating as part of the holographic element, the grating interacting with a wavelength based on a characteristic of a material forming the holographic element (line 40 to line 50 of Col. 9).

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Regarding claim 27, De Vreet discloses the first optical signal raveling in a different direction than the second optical signal (see Fig. 7 or Fig. 15).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 5-7, 20, 38, 41, 54, 55, 61, 63, 76, 77, 85, 89, 90 and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Vreet et al.

De vreet discloses the claimed invention except for tuning the optical filter by means of physically moving/rotating the hologram such that the optical signal sees a varying effective period length of the gating, wherein filtering occur at a Bragg matching angle beam the input signal and the recorded gratings.

However, the mechanism of filtering optical signals, which are multiplexed in a volume hologram by means of rotating the

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hologram to Bragg match the angle of the input signal with the desired wavelength is well known in the art.

It would have been obvious, at the time the invention was made, to a person having ordinary skill in the art to utilize such a mechanism in the invention of De Vreet for the purpose of simplifying the manufacturing process of the volume hologram, which does not require built-in electrodes for tuning.

Claims 4, 9-11, 13-16, 18, 19, 21, 25, 26, 30, 31, 39, 40, 49-53, 59, 64, 73, 83, 84 and 93-95 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Vreet et al. (US 5,640,256) in view of Domash et al. (US 6,567,773).

De Vreet discloses the claimed invention including the teaching that the filter is intended for wave division multiplexing devices (line 66 of Col. 10). De Vreet does not teach how the device is implemented in a WDM optical system. There is no explicit teaching with regard to the following:

- The system dropping/adding wavelength(s).
- Second optical signal being a drop output signal which travels in a different direction than either an input signal or output signal.
- Double prism forming a retroreflecting operation to reflect the output signal in the opposite direction.



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- Optical detector receiving the drop signal, and converting the drop signal to an electrical signal.
- A laser element (DFB) receiving the electrical signal and converting the electrical signal to an optical signal.
- Second signal traveling in a same or opposite direction (at 180 degrees) of the direction of first signal.
- A GRIN lens.
- The dropped signal includes only one wavelength.
- Changing a direction of dropped signal using the hologram.
- The first optical output signal including the others of the wavelengths and a second optical output signal including the one of the wavelengths traveling in different directions.
- The first and second output signals have a constant angle therebetween.
- The output optical beam includes a first output optical beam and a dropped optical beam, extending in different directions, the first output optical beam

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having at least one frequency band removed relative to the input optical beam.

- The input optical beam includes a first input optical beam, and a second input optical beam with at least one wavelength range to be added to contents of the first input optical beam, the first and second input optical beams coming from different directions.
- An input fiber, an output fiber, dropped output fiber, wherein selected wavelengths are diffracted to dropped output fiber.
- Repeater element, receiving an output signal, converting the output signal to an electrical signal, and reconvertng the electrical signal to an optical signal.
- Double prism forming reflecting the output signal in the opposite direction, and located in a direction where it will not contact a dropped optical signal for the dropped output fiber.

However such features are conventional in optical communication devices. For example, Domash teaches a switchable add/drop filter which has different configurations with respect

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to the input/output add or drop ports as can be seen in Fig. 5A, 5B, 5E, 6A, 6B, 8A, 8B, 10A-10E, 20 and 21.

It would have been obvious, at the time the invention was made, to a person having ordinary skill in the art to provide such elements and configurations of the add/drop/output ports for the purpose of meeting particular application requirement. Furthermore, it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fayez G. Assaf whose telephone number is (703) 306-5526. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Fayez Assaf  
June 30, 2003



**Cassandra Spyrou**  
**Supervisory Patent Examiner**  
**Technology Center 2800**